"reduced rotor inertia" is desired. As shown in Figs. 7 and 8 a pair of spaced capacitor plates 50, 51 (not 52) have a rotatable shaped dielectric 42 (see Fig. 8) between them. Because of this construction the angle measurement is limited to 90 degrees.

Mounted on the end of shaft 39 is a parasitic capacitor plate 52 whose "position...is adjustable, in order to compensate for parasitic capacitance between parts of the variable capacitance transducer." Referring to Fig. 6A this capacitance is not shown. Rather the variable capacitors 69 and 70 represent sensor plate 50 and ground plate 51. Plate 50 is shown in detail in Fig. 1 and includes plate pairs 10, 11 and 12, 13.

While the Lustenberger patent indeed shows a torque measuring device (and with differential action as shown in Fig. 4), as illustrated in Fig. 1 it uses a pair of electromagnetic shielding spoked discs 3.4 respectively attached to different shaft portions to react with coils 1 and 2 to measure torque. Fig. 4 shows these coils in a differential arrangement as 17.18 and 19. Thus Lustenberger electromagnetic configuration does not readily suggest a capacitive alternative.

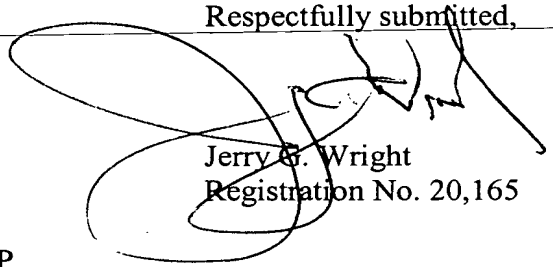
The present invention to provide an output signal of sufficient magnitude and linearity and stability with temperature change uses differential capacitors in an arrangement which achieves the foregoing. Claim 1 has been amended to more clearly set out this arrangement although it believed the original claim is allowable as is. It is now specified that the pair of concentric capacitor rings lying in a common plane and encircling a shaft portion has one ring with a greater diameter then the other. Then the addition of modified claim 5 sets out that each apertured conductive disk has matching concentric rings with alternating apertures which are offset at least in part to provide the differential capacitances. New claim 5 specifies a 180 degree offset as in the original claim. Claim 8 demonstrates the differential nature of this arrangement where in positions of maximum or minimum torque this offset provides max and min capacitance.

Moreover the amount of decreased capacitance is equal to the increase for good linearity.

Stokes' sensor plates 50 and 51 do not lie in a common plane in a concentric manner. Plate 52 does not encircle a shaft(it is mounted on a shaft). . The disks 3,4 don't have a pair of concentric apertured rings. And most important Stokes doesn't measure torque but only shaft rotation. To combine Lustenberger and its electromagnetic structure cannot be done and even a partial construction is possible only with the hindsight of the present invention.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

Respectfully submitted,



Jerry G. Wright
Registration No. 20,165

September 3, 2002
COUDERT BROTHERS LLP
600 Beach Street, Third Floor
San Francisco, CA 94109
Telephone: (415) 409-2900
Telefax: (415) 409-7400

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the specification:

In a response dated September 20, 2001, a new corrected specification, claims and abstract with proper spacing were submitted.

In the claims:

1. A differential capacitive torque sensor for a continuously rotating shaft where the shaft is split into first and second halves by a buried torsion bar comprising:

a dielectric disk having a plurality of spokes mounted for rotation with a first half of said shaft;

a pair of first and second apertured conductive disks ~~eaging~~ forming a cage for said dielectric disk and mounted for rotation with said second half of said shaft said cage shielding portions of said spokes of said dielectric disk in proportion to applied shaft torque;

a pair of concentric capacitor plate rings lying in a common plane one ring having a greater diameter than the other encircling said first shaft half and juxtaposed with said first apertured conductive disk;

an opposed capacitor plate encircling said second shaft half and juxtaposed with said second apertured conductive disk; [~~and~~] each apertured conductive disk including apertures arranged in a pair of concentric rings that match the first and second concentric plate rings which encircle aid first shaft half. said apertures alternating with solid conductive portions around a circle said concentric rings being offset from one another so that at least part of the solid portion of one ring matches the aperture of the other to provide differential capacitances; and

electrical bridge means for comparing the capacitances formed between said pair of concentric rings and said opposed capacitor plate for determining said applied shaft torque.

5. A torque sensor as in claim 1 where said offset is 180 degrees. ~~where each apertured conductive disk includes apertures arranged in concentric rings that match the first and second concentric plate rings which encircle said first shaft half. said apertures alternating with solid conductive portions around a circle said concentric rings being offset from one another by 180 degrees so that the solid portion of one ring matches the aperture of the other.~~

In the drawings:

Formal drawings are being submitted.